



# US Army Corps of Engineers

Toxic and Hazardous  
Materials Agency

ADDENDUM TO

FINAL

SITE SPECIFIC SAFETY AND HEALTH PLAN FOR  
FORT GEORGE G. MEADE  
BASE CLOSURE PARCEL SITE INSPECTION STUDY

Prepared for:

U.S. Army Toxic and Hazardous Materials Agency  
ATTN: AMXTH-IR-D (Edwards)  
Building E 4435 Aberdeen Proving Grounds  
Edgewood, Maryland 21010-5401

Prepared by:

A Mid-Atlantic Regional Operations  
EA Engineering, Science, and Technology, Inc.  
Sparks, Maryland 21152

Distribution Unlimited,  
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September 1990

EA Project 10559.05

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SA Brown 9/19/90  
Steven A. Brown, Project Manager Date

M V Sharpe for 9/19/90  
Michael V. Sharpe, Hazardous Waste Operations Coordinator Date

J W Breysse 9/19/90  
Jill W. Breysse, Corporate Safety and Health Officer Date

September 1990

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## ADDENDUM

### 1. INTRODUCTION

#### 1.1 PURPOSE

This document serves as an addendum to the Final Site Specific Safety and Health Plan (SSHP) for the Ft. George G. Meade Base Closure Parcel Site Inspection Study (April 1990). It is not designed as a stand alone document.

The scope of this addendum is limited to operations performed during the active and passive soil gas monitoring at the Active Sanitary Landfill. Requirements for Training, Medical Surveillance, Site Control, and Emergency Response are not addressed by this addendum, but instead are delineated in the Final SSHP for the Fort George G. Meade Base Closure Parcel Site Inspection Study (April 1990).

#### 1.2 WORK SCOPE

Active and passive soil gas sampling will be conducted at the Active Sanitary Landfill. The exact sample locations will not be determined until operations are initiated.

The soil gas survey is conducted by driving a sampling probe into the subsurface in a pattern that will generate data to meet the investigation objectives. After the probe has been driven and sealed (generally to a depth of 2 to 5 feet), a vacuum is applied to the distal probe end and gas is withdrawn and discharged to waste until a near-steady state condition is established. After near-steady state conditions have been established, an aliquot of gas is collected and introduced into an appropriate detection device. The detection device is selected based on the compounds of interest at the subject site.

In order to assess the effect of the landfill gas contamination on the immediate atmosphere a passive soil gas sampling technique will be employed in addition to the active method.

In passive sampling, an absorbent activated-charcoal sampler is buried at a shallow depth (1-3 ft) and allowed to collect volatile organic compounds (VOCs) from the soil atmosphere. Data collected during the active soil gas sampling survey will be used to assess the optimal position for passive sampler burial. After a set time (8 hours to two weeks) the sampler is retrieved and transported to a laboratory for analysis. Passive soil-gas samplers will be solvent desorbed and analyzed for purgeable hydrocarbons and aromatics by EPA methods 601 and 602, respectively. The data obtained will be used to assess a VOC emission rate from the landfill.

### 1.3 RESPONSIBILITIES

The following EA personnel are responsible for the assuring the requirements of the Final SSSHP are adhered to during the field work identified in this addendum:

Corporate Safety and Health Officer:	Jill Breysse
Project Manager:	Steven Brown
Site Manager:	Vincent Williams
Site Safety and Health Supervisor:	Vincent Williams

The specific responsibilities of these individuals are outlined in the Final SSSHP for this project.

## 2. SITE DESCRIPTION

The Fort Meade landfill is located near the eastern boundary of the Post. The local topography consists of gently rolling land. A trailer park and other residential buildings are located within .5 mile to the east and northeast of the perimeter of the landfill.

According to a summary prepared by Environmental Science and Engineering, Inc., between 1958 and 1976, trench-and-fill landfill operations were performed at this site. Since that time, the area directly over the landfill has been used to dispose of sanitary solid waste. Petroleum, oils, lubricants, and solvents were also reportedly disposed of in the landfill.

### 3. HAZARD ANALYSIS

#### 3.1 CHEMICAL HAZARDS

A list of the substances known or suspected to be present at the landfill is presented in the following Hazardous Substances List. This list is an amendment of Table 3-1 presented in the April 1990 SSHP and replaces the table in the SSHP. Although many of these contaminants are capable of exerting toxic effects ranging from mild skin irritation to cancer, exposure must occur for the health effects to be expressed.

During the soil gas sampling field work, the primary exposure route of concern is inhalation of VOCs during vacuum pumping of soil vapor through the probes. No soil gas data are available; however, results of groundwater, soil, surface water, and leachate sampling at the landfill indicate that levels of VOCs present (see Table 3-1) in these media are not expected to pose a significant inhalation risk if they volatilize.

Dermal contact with contaminated soils and groundwater may occur during removal of the sampling probes and installation/removal of activated-charcoal samplers during the passive soil gas sampling. However, levels noted in these media indicate that exposure via direct contact during either task is probably minimal.

In consideration of the scope of work, the potential for exposure to unsafe concentrations of airborne contaminants during site investigation is expected to be minimal. Precautions have been developed to minimize the risk of skin contact with contaminated soil, water and sediments, as well as inhalation of any contaminant-bearing dust or volatile compounds and are presented in Section 4 of this addendum.

### 3.2 PHYSICAL HAZARDS

Physical hazards imposed by this operation include fire/explosion due to potential presence of methane in the subsurface of the landfill, buried utilities, heat stress, and biological hazards. Because of the potential to encounter methane during this work, no spark generating operations may occur near probe locations, and no smoking or use of lighted materials is permitted. Precautions and requirements for other physical hazards listed above are discussed in detail in Sections 3.3.3, 3.3.4, and 3.3.9 of the April 1990 SSHP and must be followed at all times.

#### 4. ENVIRONMENTAL MONITORING

It is not anticipated that workers will encounter above background concentrations of suspected contaminants in their breathing zone while performing the soil gas monitoring operations at the Fort Meade Active Sanitary Landfill site. Also, since the equipment used to analyze soil gas samples is far more sensitive than direct reading total volatile organic detectors, additional monitoring is not necessary at the source. Workers must remain up-wind of the vacuum pump outlet at all times during sample collection. If the data collected indicates the presence of volatile compounds in concentrations exceeding any Established Exposure Limits (Table 3-1), the Site Manager will immediately notify the EA Hazardous Waste Operations Coordinator or Corporate Safety and Health Officer so that further actions may be determined.

## 5. PERSONAL PROTECTIVE EQUIPMENT (PPE)

Level D PPE will be required for employees performing the active and passive soil gas sampling operations at the Sanitary Landfill. Specific equipment are listed below.

SITE: Fort George G. Meade Sanitary Landfill

<u>Work Task</u>	<u>Level of Protection</u>	<u>Specific PPE</u>
Active and passive soil gas sampler installation/removal	D	Poly/cotton coveralls, nitrile gloves (where contact with contaminated soil or water is anticipated), steel toe/shank boots, safety glasses during invasive operations.

## 6. DECONTAMINATION

Prior to leaving the site and entering EA vehicles, remove and discard all disposable clothing (gloves, etc.) into plastic garbage bags for transport to and disposal at EA. Remove caked-on mud, dirt, etc. from boots and clothing. Remove non-disposable coveralls and place in plastic bag prior to leaving the site. Launder non-disposable clothing daily separating from other laundry items. Hands, face and other exposed skin areas must be washed with soap and water prior to leaving the site. Shower and shampoo as soon as possible at the end of the work day.

All equipment must either be washed onsite with detergent and water or placed in plastic bags and washed immediately upon return to EA.

TABLE 3-1 HAZARDOUS SUBSTANCES DETECTED AT FORT GEORGE G. MEADE SANITARY LANDFILL

Contaminant	Maximum Concentration Detected (a)					Routes of Exposure Inh, Ing, Derm	Signs and Symptoms of Exposure Eyes, nose, and throat irritation; headache, dizziness; dermatitis
	Ground (b)		Surface (b)		PEL/TLV (c) 750 ppm		
	Water	440.0	Water	Leachate (b)			
Acetone							
Antimony	11.4		4.10	5.64	0.69	0.5 mg/m <sup>3</sup>	Irritation of nose, throat, mouth; cough; dizziness; headache; nausea, vomit, diarrhea; cramps; insomnia; irritated skin; unable to smell; cardiac
Arsenic	40.6		8.44	11.6	2.66	10 µg/m <sup>3</sup>	Carcinogen; GI disturbance; peripheral neuropathy; respiratory irritation
Asbestos							Carcinogen; restricted pulmonary function; interstitial fibrosis
				Historical Record	0.2 fibers/cc		
Atrazine	--		40.9	--	--	5 mg/m <sup>3</sup>	NA
Benzene	25.6		--	7.20	--	1 ppm	Irritation of eyes, nose, respiratory system; giddy; headache; nausea; staggered gait; fatigue, anorexia, lassitude; dermatitis; bone marrow depressant; abdominal pain; carcinogenic
Beryllium	--		--	--	0.503	2 µg/m <sup>3</sup>	Respiratory symptoms, weakness, fatigue, weight loss; carcinogen
						Inh	

(a) Data obtained from Phase I and II sampling and analysis of Fort George G. Meade Active Landfill by EA June - August 1989.

(b) Ground water, surface water, and leachate data are measured in µg/L unless otherwise indicated. Soil data are presented in µg/g.

(c) Permissible Exposure Level (OSHA) or Threshold Limit Value (ACGIH) for time-weighted average exposure for an 8-hour workday or 40-hour workweek. The most conservative value is listed in this column.

Inh = Inhalation

Ing = Ingestion

Derm = Dermal Contact

Abs = Skin Absorption

NA = Not Available

TABLE 3-1 HAZARDOUS SUBSTANCES DETECTED AT FORT GEORGE G. MEADE SANITARY LANDFILL (CONT.)

Contaminant	Maximum Concentration Detected (a)				Routes of Exposure	Signs and Symptoms of Exposure
	Ground Water	Surface Water	Leachate (b)	Soil (b)		
Bis(Ethylhexyl)phthalate	192	--	--	--	Inh, Derm, Ing	Irritated eyes, muscles, mucous membranes, nausea, diarrhea; carcinogen
2-Butanol (sec. butyl alcohol)	--	--	500	--	Inh, Ing, Derm	Eye irritation; narcosis; dry skin
2-Butanone	--	--	150	--	Inh, Ing, Derm	Irritation of eyes, nose, and throat; headaches, dermatitis; dizziness
Cadmium	--	--	0.007 ppm	1.37	Inh, Ing	Carcinogen; pulmonary edema; tight chest; headaches; chills; nausea; mild anemia
Chlorobenzene	18.0	--	--	--	Inh, Ing, Derm	Irritated skin, eyes, nose; drowsiness; liver damage
Chloroethane (ethyl chloride)	9.0	--	10	--	Inh, Abs, Ing, Derm	Inebriation; abdom. cramps; cardiac arrhythmia & arrest; liver and kidney damage
Chromium	6.2	--	0.093 ppm	35.7	Inh, Ing	Fibrosis of lungs; carcinogen
Copper	42.9	--	--	69	Inh, Derm, Ing	Irritation of mucous membrane, pharynx; nasal perforation; eye irritation; metal taste; dermatitis
Cresol	--	--	0.5 ppm	--	Inh, Abs, Ing, Derm	CNS effects; depression; respiratory failure; weak pulse; skin, eye burns
1,2-Dichlorobenzene	--	--	9.8	--	Inh, Abs, Ing, Derm	Irritable nose, eyes; liver, kidney damage; skin blister
1,4-Dichlorobenzene	22.0	--	--	--	Inh, Ing, Derm	Headache; eye irritation; swell periorbital; profuse rhinitis; anorexia, nausea, vomit; low-weight; jaundice, cir
1,1-Dichloroethane	--	--	--	0.37	Inh, Ing, Derm	CNS depression; skin irritant; drowsiness; unconsciousness; liver, kidney damage

TABLE 3-1 HAZARDOUS SUBSTANCES DETECTED AT FORT GEORGE G. MEADE SANITARY LANDFILL (Cont.)

Contaminant	Maximum Concentration Detected (a)				Routes of Exposure Inh, Ing, Derm	Signs and Symptoms of Exposure Dizziness, mental dullness, nausea, headache, fatigue, anesthesia, hepato megal, eye, skin irritation, carcinogen
	Ground Water 6.57	Surface Water	Leachate (b)	Soil (b)		
Chloroform						
1,2-Dichloroethane (ethylene dichloride)	--	--	70	--	1 ppm Inh, Abs Ing, Derm	Irritation of the respiratory tract; narcosis; conjunctivitis
Diethylphthalate	75	--	1,200	--	5 mg/m <sup>3</sup> Inh, Ing Derm	Irritation of mucous membranes; stomach pain
2,4-Dimethylphenol	11.0	--	--	--	NA NA	NA
Di-N-Octyl-Phthalate	114	--	--	--	NA	NA
Ethylbenzene (styrene)	91.0	--	27	--	100 ppm Inh, Ing Derm	Irritation of eyes and mucous membranes; headaches; dermatitis; narcosis; edema
2-Hexanone	--	--	100	--	5 ppm Inh, Ing Derm	Eye & nose irritant; peripheral neuropathy; headache
Lead	8.8	--	0.02 ppm	--	0.05 mg/m <sup>3</sup> Inh, Ing Derm	Insomnia; low weight; malnutrition; constipation; abdominal pain; anemia
Mercury	0.37	--	0.36	0.45	0.01 mg/m <sup>3</sup> (alkyl) 0.05 mg/m <sup>3</sup> (other) Inh, Ing Derm	Cough; bronchial pneumonia; insomnia; irritability; headache; fatigue; low weight; skin and eye irritant
3-Methyl-2-butanone (methyl isopropyl ketone)	--	--	200	--	200 ppm Inh	Eye and mucous membrane irritation; headache; dermatitis; narcosis
Methylene chloride	--	--	260	0.027	100 ppm Inh, Ing Derm	Weakness, light-headedness; numbness of the limbs; nausea; skin and eye irritation; vertigo; suspect carcinogen
Methyl isobutyl carbinol (4-methyl-2-pentanol)	--	--	15	--	25 ppm Inh, Ing Derm	Eye irritant; headache; drowsiness
4-Methyl-2-pentanone (hexanone)	--	--	40	--	50 ppm Inh, Ing Derm	Eye and mucous membrane irritation; headache; narcosis; coma; dermatitis

TABLE 3-1 HAZARDOUS SUBSTANCES DETECTED AT FORT GEORGE G. MEADE SANITARY LANDFILL (Cont.)

Contaminant	Maximum Concentration Detected (a)				Routes of Exposure Inh, Ing,	Signs and Symptoms of Exposure Irritated eyes, respiratory system; CNS depression
	Ground (b) Water	Surface (b) Water	Leachate (b)	Soil (b)		
1,2-Dichloroethylene	4.89	--	--	--	PEL/TLV (c) 200 ppm	
"Mustard" Gas (2,2-dichloroethyl sulfide)			Historical Record		0.0001 mg/m <sup>3</sup> (b)	
Naphthalene	--	--	10	--	10 ppm	Eye irritant; headache; excitement; nausea; vomiting; profuse perspiration
Nickel	44.8	--	27.7	96.0	1 mg/m <sup>3</sup>	Sensitization dermatitis; allergic asthma; nasal cavities, pneumonitis; (carcinogenic)
Nitrogen dioxide	--	--	0.03 ppm	--	3 ppm	Cough; chest pain; cyanosis; pulmonary edema; eye irritant
2-Pentanone	--	--	50	--	200 ppm	Eye, nose, and throat irritation
Phenol	--	--	300	--	5 ppm	Eye, nose, and throat irritant; muscle ache; liver and kidney damage
Pyridine	--	--	0.75 ppm	--	5 ppm	Headache; insomnia; nausea; frequent urination; eye irritation; kidney and liver damage
Silver	10.1	--	0.92 ppm	18	0.1 mg/m <sup>3</sup> (metal) 0.01 mg/m <sup>3</sup> (soluble)	Blue-grey eyes; throat and skin irritant; GI ulceration
Tetrachloroethylene	54.0	--	18	--	50 ppm	Eye, nose, and throat irritation; nausea; flush face and neck; dizziness; headache; suspect carcinogen
Toluene	22	--	130	--	100 ppm	Myelocytic anemia; narcotic in high concentrations

TABLE 3-1 HAZARDOUS SUBSTANCES DETECTED AT FORT GEORGE G. MEADE SANITARY LANDFILL (Cont.)

Contaminant	Maximum Concentration Detected (a)					Routes of Exposure Inh, Ing, Derm	Signs and Symptoms of Exposure
	Ground (b)	Surface (b)	Leachate (b)	Soil (b)	PEL/TLV (c)		
	Water	Water			0.2 mg/m <sup>3</sup>		
Selenium	--	--	--	3.37			Irritated eyes; nose, throat; vision; headache, chills; fever; dippnea, bronchitis; metal taste, garlic breath; GI; dermatitis, blurred eyes, skin.
PCBs	--	--	--	2.01	0.5 mg/m <sup>3</sup>	Inh, Ing, Derm	Irritated eyes; skin; acneiform dermatitis; jaundice, dark urine, carcinogen
1,1,1-Trichloroethane	--	--	--	0.053	350 ppm	Inh, Ing, Derm	Headache; lassitude; CNS depression; poor equilibrium; irritated eyes; dermatitis; cardiac arrhythmia
Trichloroethylene	7.0	--	40	--	50 ppm	Inh, Ing, Derm	Headaches; nausea, vomiting; vertigo, eye irritation, cardiac arrythmia; tremors; dermatitis
Vinyl Chloride	29.0	--	--	--	1 ppm	Inh	Weakness, abdominal pain; GI bleeding; hematomegaly, pallor or cyanosis of the extremities; carcinogen
Xylene	134	--	--	--	100 ppm		Dizziness, excitement, drowsi- ness, incoordination, staggering gait; irritation of eyes, nose, throat; corneal vacuolization; anorexia, vomiting, abdominal pain; dermatitis
Zinc	1,730	54.4	12.3	85.6	10 mg/m <sup>3</sup>	Inh, Derm	Metal fume fever; nausea, chills; shortness of breath; chest pain

ATTACHMENT A

SITE WORKER TRAINING AND PHYSICAL EXAMINATION RECORD

SITE: Ft. George G. Meade Active Sanitary Landfill

<u>Name</u>	<u>Date Training Completed</u>			<u>Date of Last Physical Examination</u>
	<u>Initial</u>	<u>Annual</u>	<u>(*)</u>	
<u>Vince Williams</u>	<u>3/2/90</u>	<u>          </u>	<u>9/7/90</u>	<u>3/20/90</u>
<u>John Sullivan</u>	<u>1/12/90</u>	<u>4/13/90</u>	<u>          </u>	<u>2/20/90</u>
<u>Courtney Lowe</u>	<u>6/4/90</u>	<u>          </u>	<u>          </u>	<u>5/25/90</u>

No other personnel are permitted onsite without prior approval of the CSHO or a person designated by the CSHO.

(\*) Other specialized training required for this project. (On-site Supervisors Training).

## SITE SAFETY AND HEALTH PLAN REVIEW RECORD

I have read the Site Safety and Health Plan for this site and have been briefed on the nature, level, and degree of exposure likely as a result of participation in this project. I agree to conform to all the requirements of this Plan.

[illegible]